REMARKS

This amendment responds to the Office Action mailed April 18, 2007. Reconsideration and allowance of the claims is requested in view of the following comments.

Status of the Claims

Claims 1-16 are pending in the application. Claims 1, 2, and 13-15 have been amended. Claim 16 has been added. Support for new Claim 16 is found in the specification at paragraphs 39-43.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 13 and 14 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. As to Claim 13, the Office Action alleged that the value Q_s is not well defined so as to claim comparisons between Q_{sL} and Q_{sH}. Applicant respectfully traverses the rejection. Claim 13 specifically recites Q_{sL} as being computed as a sum across a first portion of the set of samples, and Q_{sH} as being computed as a sum across a second portion of the set of samples. Q_s, as claimed, is computed as a sum across both the first and second portions of the set of samples.

The Office Action alleged that Claim 14 was indefinite for reciting the language "symbol 1 or not used is used." More accurately, this particular portion of the claim reads: "symbol 1 or not is used." Applicant submits that this text, when taken in the context of the claim, meets the requirement of Section 112. Nevertheless, to improve the clarity of Claim 14, the claim has been amended to read: "in which pilot tracking data used for deciding whether a sample represents a symbol 1 is further augmented with decision feedback data samples from samples of a received signal."

In view of the foregoing, applicant requests withdrawal of the claim rejections under Section 112.

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Claim Rejections Under 35 U.S.C. §§ 102(b) and 103(a)

The Office Action cited De Gaudenzi as anticipating Claims 1-3, 5-12, and 15. Claims 4 and 14 were rejected as being obvious in view of a combination of De Gaudenzi and Agrawal or Crawford. Applicant respectfully disagrees.

The De Gaudenzi paper does not explicitly discuss how the Rake weights are generated, though it does identify the ML (Maximum Likelihood) method as being used for the Rake combining and proceeds with a statistical performance analysis. ML implies a set of weighting coefficients that are based on the estimates of the channel impulse response. It is well known that if the noise associated with a received signal is Gaussian and the delay samples of the Rake receiver are independent, the ML processing results in a "Maximum Ration Combining" where the Rake weighting coefficients correspond directly to the estimate of the channel impulse response at the set of delays used by the Rake receiver.

De Gaudenzi's paper does not explicitly teach how these estimates of the channel impulse response are made. However, a typical method is to use a deterministic pilot signal that is transmitted. The received version of the pilot signal is deconvolved to provide an estimate of the channel impulse response. In practical cases, deconvolution is too expensive from a computational or signal processing perspective and simpler suboptimal methods are used that have been extensively published.

The ideal Rake receiver, implied by De Gaudenzi's paper, essentially uses a weight for the Rake finger corresponding to the delay of T_D given by the complex conjugate of the channel impulse response (a complex number) corresponding to the same delay. Generally, the estimation of the channel impulse response is a process that is separate from the "main stream" processing of the Rake receiver.

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While the De Gaudenzi's paper states that single bit ADC sampling can be used (see Fig. 2a), there is no discussion of how these single bit samples are combined to use as Rake weights.

Accordingly, applicant submits that De Gaudenzi's paper does *not* teach or suggest a telecommunications apparatus as claimed in Claim 1, comprising a multi-finger Rake receiver having a serial stage and a parallel stage having parallel branches, the parallel branches being weighted by weighting factors, and a single bit quantizer on the serial stage, the single bit quantizer having single bit output, and the weighting factors being generated by estimated probabilities of the single bit output from the single bit quantizer. Accordingly, applicant submits that Claim 1 is both novel and inventive over De Gaudenzi.

As a matter of caution, applicant has further considered the disclosure of Agrawal (US 6,366,600) and Crawford (US 6,549,561) with respect to Claim 1 and finds that neither Agrawal nor Crawford overcomes the deficiencies of disclosure of De Gaudenzi. For these reasons, applicant submits that Claim 1 is patentable over any alleged combination of the cited art.

Claims 2-16 depend either directly or indirectly from Claim 1 and thus are also allowable over De Gaudenzi, whether considered alone or in combination with Agrawal. Claims 2-16 are also patentable over the cited art for the additional subject matter they recite which is not taught or disclosed by De Gaudenzi, Agrawal, or Crawford. Accordingly, Claims 2-16 should also be allowed.

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CONCLUSION

In view of the above comments, applicant requests withdrawal of the claim rejections and issuance of a notice of allowance. Should the Examiner identify any additional matters needing resolution prior to allowance, the Examiner is invited to contact the undersigned counsel by telephone.

Respectfully submitted,

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